

B²

CONT

--13. A signal transmission apparatus for transmitting a first data stream and a second data stream, said signal transmission apparatus comprising:

an error correction code (ECC) encoder operable to ECC encode at least one of the first and second data streams such that the at least one of the first and second data streams is an ECC encoded data stream;

a modulator operable to assign each data stream to a respective constellation in the signal space to produce modulated signals such that the number of signal points of the first data stream assigned in the signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including information representing signal points of the second data stream in a signal space;

and

a transmitter operable to transmit the modulated signals.

14. A signal transmission apparatus according to claim 13, wherein said error correction code encoder is operable to ECC encode the first data stream with a first ECC encoding and to ECC encode the second data stream with a second ECC encoding that is different from the first ECC encoding.

15. A signal receiving apparatus comprising:

a receiver operable to receive a received signal having information of a first data stream and a second data stream, wherein the number of signal points of the first data stream assigned in a signal space is different from the number of signal points of the second data

B²

CONT

stream assigned in the signal space, and the first data stream has data for demodulation including information representing the number of signal points of the second data stream in a signal space;

a demodulator operable to demodulate the received signal such that the second data stream is demodulated according to the data for demodulation in the first data stream; and

an error correction code (ECC) decoder operable to ECC decode an output of said demodulator.

16. A signal receiving apparatus according to claim 15, wherein said error correction code decoder is operable to ECC decode the first data stream with a first ECC decoding and to ECC decode the second data stream with a second ECC decoding that is different from the first ECC decoding.

17. A signal transmission system for transmitting and receiving a first data stream and a second data stream, said signal transmission system comprising:

a signal transmission apparatus for transmitting the first and second data streams, said signal transmission apparatus including an error correction code (ECC) encoder operable to ECC encode at least one of the first and second data streams such that the at least one of the first and second data streams is an ECC encoded data stream, a modulator operable to assign each of the first and second data streams to a respective constellation in the signal space to produce modulated signals such that the number of signal points of the first data stream assigned in the signal space is different from the number of signal points of the second data stream assigned in the signal space, and the

B²
CONT

first data stream has data for demodulation including information representing signal points of the second data stream in a signal space, and a transmitter operable to transmit the modulated signals; and

a signal receiving apparatus including a receiver operable to receive a received signal having information of the first and second data streams, a demodulator operable to demodulate the second data stream according to the data for demodulation in the first data stream, and an error correction code (ECC) decoder operable to ECC decode an output of said demodulator.

18. A signal transmission system according to claim 17, wherein said error correction code encoder is operable to ECC encode the first data stream with a first ECC encoding and to ECC encode the second data stream with a second ECC encoding that is different from the first ECC encoding.

19. A signal transmission system according to claim 17, wherein said error correction code decoder is operable to ECC decode the first data stream with a first ECC decoding and to ECC decode the second data stream with a second ECC decoding that is different from the first ECC decoding.

20. A signal transmission method for transmitting a first data stream and a second data stream, said signal transmission method comprising:

error correction code (ECC) encoding at least one of the first and second data streams such that the at least one of the first and second data streams is an ECC encoded data stream;

B2
CONT

assigning each data stream to a respective constellation in the signal space to produce modulated signals such that the number of signal points of the first data stream assigned in the signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including information representing signal points of the second data stream in a signal space; and
transmitting the modulated signals.

21. A signal transmission method according to claim 20, wherein said error correction code encoding comprises ECC encoding the first data stream with a first ECC encoding and ECC encoding the second data stream with a second ECC encoding that is different from the first ECC encoding.

22. A signal receiving method comprising:
receiving a received signal having information of a first data stream and a second data stream, wherein the number of signal points of the first data stream assigned in a signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including information representing the number of signal points of the second data stream in the signal space;
demodulating the second data stream according to the data for demodulation in the first data stream; and
error correction code (ECC) decoding an output of said demodulating of the second data stream.

B²

CONT

23. A signal receiving method according to claim 22, wherein said error correction code decoding comprises ECC decoding the first data stream with a first ECC decoding and ECC decoding the second data stream with a second ECC decoding that is different from the first ECC decoding.--